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ABSTRACT

Information and exercises in this two-part learning module are provided to acquaint instructors with the educational theory behind competency-based education (CBE) and to help them apply this theory in the classroom. Part I of the module discusses: (1) the defining characteristics of CBE, in which instructional processes are designed to facilitate student achievement in a hierarchy of articulated cognitive, attitudinal, and psychomotor objectives; (2) the implications of these characteristics for grading and course sequencing; (3) the factors influencing the development of CBE, including demands for accountability, increased educational research and development, and advances made in mastery learning, developmental stage theory, and the movement away from norm-referenced testing; (4) the varying approaches to CBE taken by those in developmental instruction, general education, vocational education, and experiential programs; and (5) the roles played by instructors and students in the CBE process, which involves determining the rationale for a course, identifying outcomes, designing a summative assessment, developing personalized learning strategies, recording student progress, and evaluating course success. Part II of the module applies this information in a series of exercises designed to assist the instructor in developing: a course rationale; competency statements; assessment methods; outcome-based grade contracts; and personalized learning activities. (JP)

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COMPETENCY-BASED EDUCATION: An Overview

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I. INTRODUCTION

A study recently completed at The University of Texas revealed that one-fifth of the adults of this country, 23 million Americans, feel inadequate to complete such routine chores as shopping, getting a driver's license, or reading an insurance policy. Another 39 million Americans feel insecure about their effectiveness as they assume the roles of effective parent, consumer, worker, and citizen. In fact, the study revealed that only 46 percent of adults in the United States can be described as functionally competent in dealing with the complexities of modern living (Roueche and Roueche, p. 4). With such dismaying evidence that public education is not equipping great numbers of Americans to be capable, competent adults, it is not surprising that a recent movement in education designated Competency-Based Education (CBE) is assuming bandwagon status. CBE addresses in a creative way the fundamental issue of accountability in education and seeks to offer a clearer way to make the educational process responsive to the growing numbers among our diverse student population who are not being equipped to function effectively in society.

II. RATIONALE

As educators read national journals and attend conferences, a plethora of new ways to teach bombard them. In response they ask: "Should I use audio tutorial instruction?", "Are my courses accommodating students' learning styles?" When reading in their own disciplines or when listening to national dialogues on liberal or general education, they are asked: Are my courses relevant? Likely to give students life skills? Futuristic? Based on the new trends in their disciplines? Interdisciplinary? Change has not only been a constant but has also occurred so rapidly that one faculty member in a community college remarked that she felt like an amoeba sitting in some petri

dish while a scientist dropped chemical after chemical on her to see how she responded. There's an implied lack of coherence among the various chemicals. What is the nature of the experiment and how does each chemical contribute to the sought-after solution? Competency-based education is a framework designed to bring coherence to this great experiment we're all a part of--education. Educational change proceeds from the basic premise that there's a way to do something better. A lack of fit between what we're doing and how well it works provides the motivation to experiment with new ways of getting the results we want. Competency-based education provides a framework for determining the direction of that change and a process for educational planning which includes specifying outcomes, then facilitating, measuring, and certifying student attainment of those outcomes. Thus it becomes a way of bringing congruence and coherence to curriculum and instructional decision-making--a way of analyzing new ideas in education to see how they fit or affect the ultimate goal--and ultimately to enhance student growth and development.

PART A:

LEARNING THE CONCEPTS

Part A: Learning the Concepts is adapted from Chapter 1 - "CBE: The Framework for Sound Educational Practice" of the book Enhancing Educational Effectiveness by Barton R. Herrscher, published by the Center for Educational Development, Houston, Texas, 1979. Copyright is retained by the author.

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I. PRETEST

1. Define competency-based education. Cite the source from which your definition is drawn, and state your reasons for choosing this definition.

2. List the "defining characteristics" of CBE.

3. Discuss the importance of each "defining characteristic" in a comprehensive approach to the implementation of CBE.

II. KEY CONCEPTS

competency-based education

competencies

objectives

process goals

outcome goals

III. LEARNING OBJECTIVES

Process Goal: To present, in a clear and concise manner, an overview of competency-based education, including strategies for applying the concepts in the classroom.

Outcome Goal: After completing this module, you will have a thorough knowledge of competency-based education and be able to apply the CBE framework to your own institutional setting, be it teaching or administration.

Objectives:

1. Define competency-based education.
2. List the defining characteristics of CBE and discuss the importance of each in a comprehensive approach to the implementation of CBE.
3. Write competency statements at the various levels which comprise the hierarchy of CBE in post-secondary education.
4. Develop instructional materials to implement a CBE framework.

IV. THE CHALLENGE

Victor Hugo has written, "More powerful than the tread of mighty armies is an idea whose time has come." Many educators feel that competency-based education (CBE) is truly an idea whose time has come. Yet, that idea is one which suffers from misinterpretation, misunderstanding, lack of precise definition and direction, and possibly overexposure in the media. This module is designed to impart a comprehensive knowledge of CBE, including a full understanding of its defining characteristics as well as some of the very important perspectives surrounding CBE as an educational movement.

V. TOWARD A DEFINITION OF CBE

Since the term "competency-based education" is politically useful with many publics in this age of educational accountability, widely differing programs, approaches and formats fly the CBE banner. This has created considerable confusion and has labeled CBE as "a bandwagon in search of a definition."

A clear definition of CBE is essential if implementation efforts are to be fruitful. The following definition is suggested:

> CBE is an educational framework which systematically focuses on student attainment of a hierarchy of publicly-stated and validated intellectual, attitudinal, and/or motor learning outcomes (competencies) and the concomitant instructional processes that facilitate, measure, and certify such attainment.

A close examination of this definition reveals a number of critical elements requiring special discussion if full understanding is to be acquired. These critical elements might be called the defining characteristics of CBE; and when extracted from the above definition and listed they are as follows:

The Defining Characteristics of Competency-Based Education

1. Educational Framework
2. Systematic
3. Student Attainment
4. Learning Outcomes (Competencies)
   - 4.1 Hierarachy
   - 4.2 Publicly-Stated
   - 4.3 Validated
   - 4.4 Intellectual, Attitudinal and/or Motor
5. Instructional Processes
   - 5.1 Facilitate
   - 5.2 Measure
   - 5.3 Certify

What follows is a full discussion of each defining characteristic aimed at building a conceptual framework to which the reader can relate. This is an important prerequisite to any attempt at implementing competency-based education.

1. Educational Framework. CBE is a broad structure within which curricular and instructional decisions are made. CBE should not be confused with processes, methods (e.g. programmed instruction) or approaches (e.g. individualized instruction), all of which might become part of the framework, but are certainly not synonymous with CBE. Some of the literature of competency-based education serves to confuse readers by defining CBE as a "process," a "movement," an "individualized program," an "approach," and a "set of integrated processes," to name a few. Competency-based education is broader than those terms tend to communicate. It is a framework, a kind of umbrella which covers all aspects of teaching and learning. And, best of all, CBE fits well within the context of traditional education. As Lance Buhl sees it

> It does not call for a revolution at all. When we look at education critically, we simply have to conclude that competencies have always been the goal of our teaching. We simply went about asking for and assessing competencies without any great awareness about the true nature of the process (Buhl, p. 46)

What this means is that necessary changes in teacher behavior that fit within the CBE framework are not nearly as drastic or extensive as most tend to envision. Much of what many teachers already do fits very nicely. Your large number of positive responses on the CBE checklist at the end of this section (p. 18) will corroborate this point. You probably will fall short on only a few items.

It is important, however, that the instructional framework utilized by teachers be as comprehensive as possible. If one is to be a true CBE practitioner, he or she must adhere to all the tenets of the framework.

2. Systematic. The CBE framework utilizes a systems approach in the design of the instructional delivery system and the curriculum decision-making processes. The three distinct components which characterize CBE are those which are common to all systematic instruction: 1) objectives, 2) learning activities, and 3) evaluation.

The basic systems model as depicted in Figure 1 establishes in the simplest form the structure for systematic instruction. Figures 2, 3 and 4 illustrate variations of instructional systems models. Common to all models are those components which characterize CBE. Each will be discussed in great detail in later sections of this module. Suffice it to say that without objectives, learning activities, and evaluation (both pre- and post-) neither CBE nor systematic instruction exists. These components are the sine qua non of the CBE framework and a systems approach to instruction.

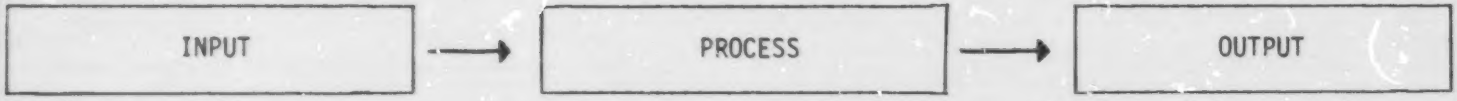


Figure 1. The Systems Model

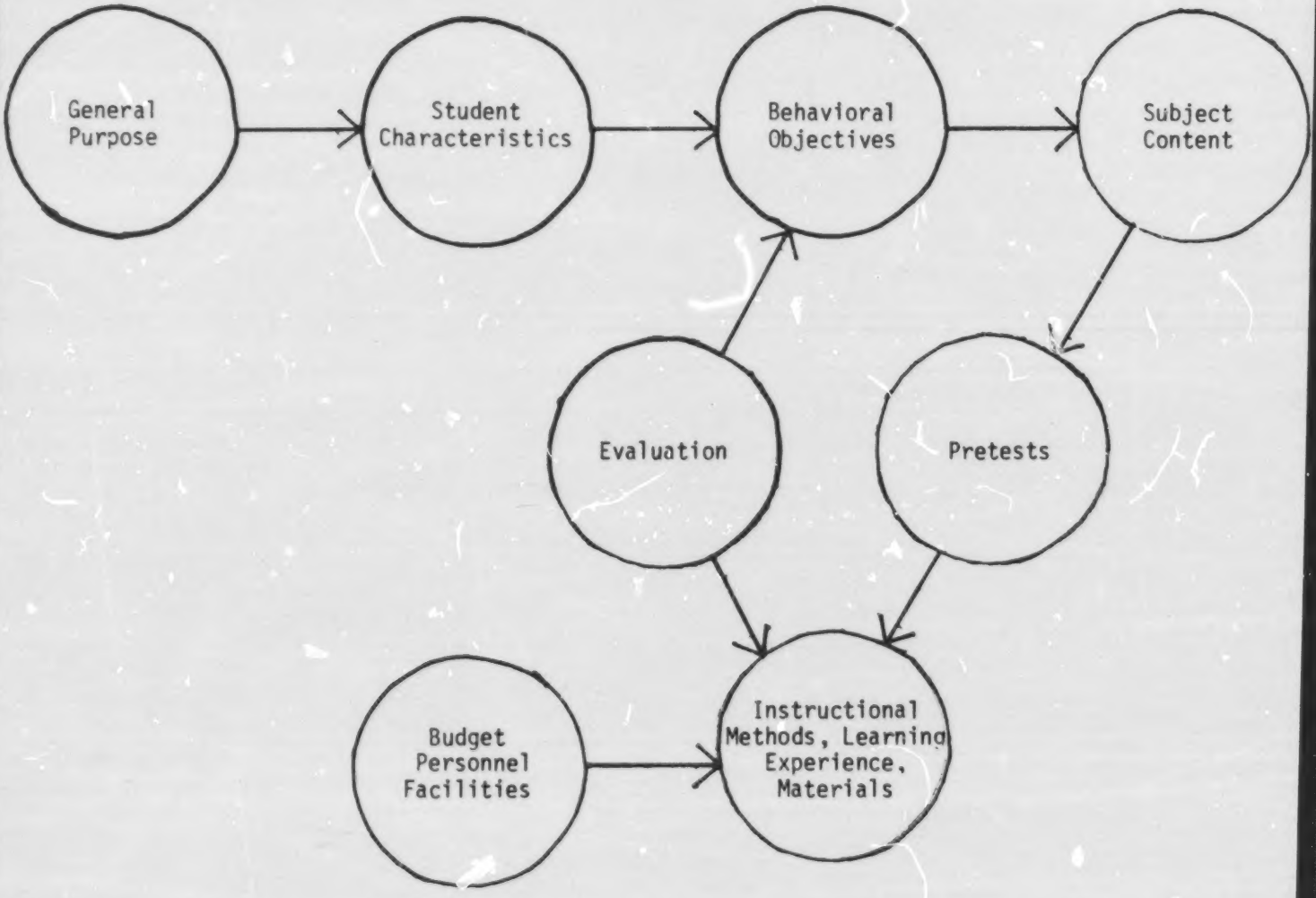


Figure 2. Kemp's Model. (Kemp, 1977)

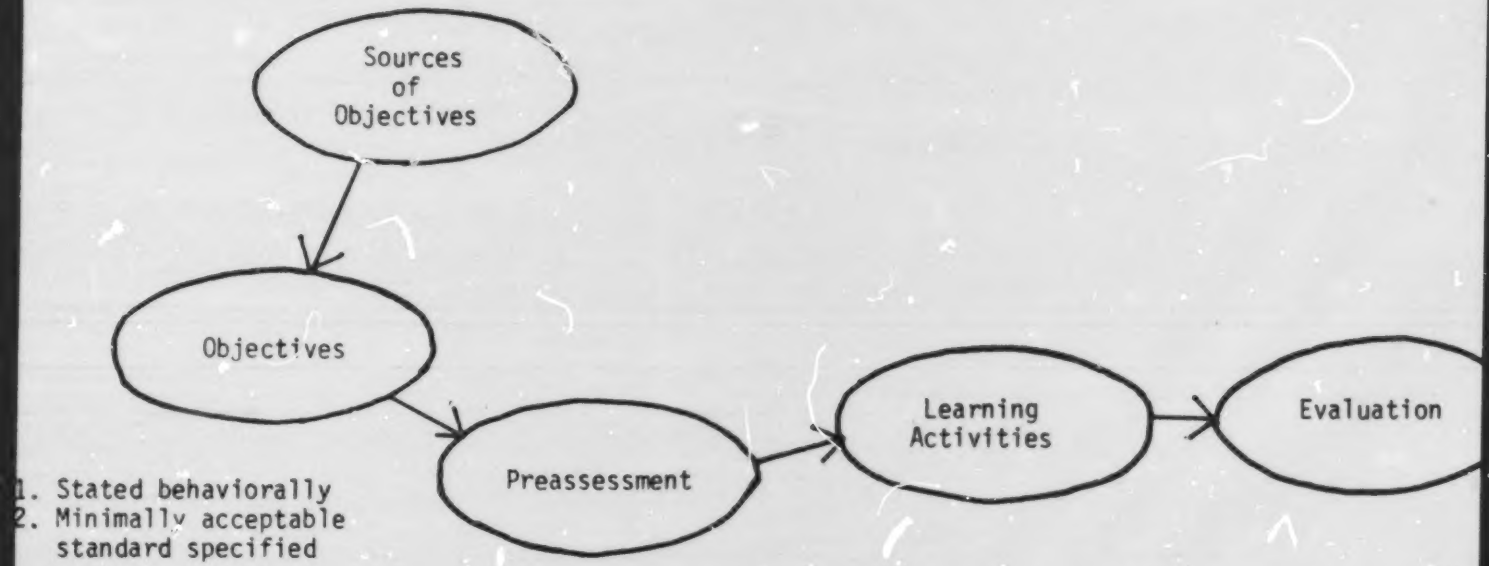


Figure 3. Popham's Model (Popham, 1970)

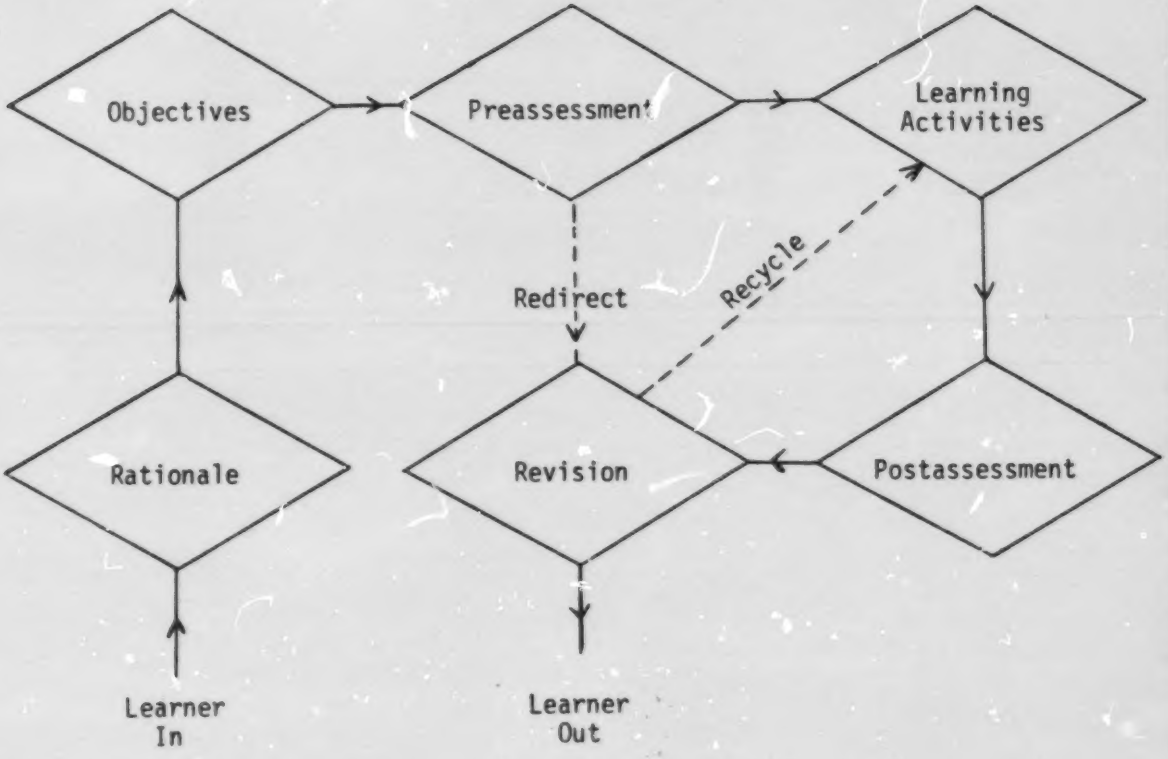


Figure 4. Herrscher's Model. (Herrscher, 1971)

3. Student Attainment. CBE focuses on student learning rather than on the activities of the teacher. Instead of asking oneself the question "What should I do in class to fill the next hour?," the teacher should ask rather "What do I want my students to know, appreciate, or be able to do at the end of the next hour?" This simple means-ends reversal can be powerful in helping teachers adopt the CBE philosophy. Thus, student learning becomes the end, teaching activities the means to that end in this systems model. This philosophical stance is basic to the CBE framework.

4. Learning Outcomes (Competencies). Intellectual, attitudinal, and/or motor capabilities derived from a specified role or setting and stated as broad composites of behavior are the outcomes around which the curriculum is built. No matter what terminology is used--competency, behavioral objective, goal--to refer to the end result of education, learning outcomes are the nucleus of CBE, and the terms can be used interchangeably. Although the literature abounds with discussions of the differences between objectives and competencies, such discourse serves no useful purpose. Instruction is measured in increments of student learning. In this module, both terms will be used to designate such outcomes. No distinction is made between them. We are interested in learning outcomes, regardless of the label used.

4.1 Hierarchy. CBE calls for a vertical structure of competency statements of various degrees of specificity which are referenced to various levels within the institution, as follows:

Level I	-	Institutional Competencies
Level II	-	Program Competencies
Level III	-	Course Competencies
Level IV	-	Unit Competencies

These competency statements denote the cognitive, affective and psychomotor outcomes the students are expected to attain as a result of their work: Level I - total Institutional experience; Level II - Course work in their major Program of instruction; Level III - Course work; Level IV - Units of instruction within courses.

The competencies range in specificity from very general statements of institutional outcomes to very specific unit outcomes.

The example below indicates the degree of specificity at which each level of competency statement is written.

Level	Competency
	The student can:
I. Institutional	Communicate effectively
II. Program	Read and interpret printed material at the appropriate levels of speed and comprehension
III. Course	Read and interpret satiric works
IV. Unit	Correctly interpret a political cartoon

And, as can be seen in this example, the four levels are directly related one to another in an hierarchical arrangement.

4.2 Publicly-Stated. Competency statements (objectives) are written and shared with appropriate audiences. This means unit and course level competencies are shared with students before instruction, and program and institutional level competencies appear as public statements in the college catalog and/or other documents which communicate the philosophy, mission, policies, procedures, and program offerings of the institution.

4.3 Validated. The process of ensuring that the competencies to be learned are relevant and valuable to a specified role and setting is a very important facet of competency-based education. This validation process should be both systematic and continuous. Advisory committees in community colleges serve as validating agents for technical/vocational programs. The primary responsibility for the validation of course content lies with faculty members.

4.4 Intellectual, Attitudinal and/or Motor. Attention is focused on those learning outcomes related to the growth and development of the total student rather than the acquisition of a narrow range of abilities. And, teachers in their role of curriculum decision-makers need to be cognizant of that "total student" and move beyond the specification of cognitive outcomes only. Affective and psychomotor outcomes are also important, and must be included in the curriculum. All three domains of human learning are the rightful territory of CBE.

Intellectual Development is the Cognitive Domain
Attitudinal Development is the Affective Domain
Motor Skill Development is the Psychomotor Domain

Written competency statements or objectives can be generated within all domains, although the prevailing notion is that the affective domain presents special problems to the teacher. In reality, the problems lie in assessing those objectives rather than writing them. Attitudinal objectives can easily be written, but documenting their attainment is something else again. But, that is a topic for our upcoming discussion of the assessment of student learning.

5. Instructional Processes. The elements of an instructional delivery system involving in-class activities designed to enhance student learning is the second half of the "curriculum and instruction" duo. After the curriculum (what is taught) is established via the specification of competency statements, the instructional processes (how it's taught) are developed. How best facilitate student learning? How best measure that learning? How best certify that the student possesses the competencies specified? These are the questions to be addressed by teachers functioning as instructional decision-makers.

5.1 Facilitate. All strategies employed which assist students in attaining the stated competencies are appropriate facilitators of learning within the CBE framework. Instructional media--lecture, programmed instruction, discussion, field trips, role playing, films, audio tapes--if these promote student learning, they fit within the CBE framework. Instructional policies--extending time for students needing more time, adapting instruction to accommodate individual differences, providing tutorial assistance to students needing it--if these promote student learning, they fit within the CBE framework.

The important point here is that CBE, when implemented correctly, does not dictate methods, approaches, or instructional policies. The teacher is the final authority on these matters, and only she/he decides how best to help students learn. The decisions are operationalized, and the instructional processes (media and policies) that facilitate learning are implemented. It's as simple as that.

"How does this differ from what I am now doing?" you ask. In large measure, it probably doesn't (your responses to the checklist items on page 18 document this). The primary difference with traditional teaching practice lies in the new awareness of the true nature of the instructional process,

and the systematic framework into which it fits as an integral part of that "whole" known as competency-based education. (Note: The module "Systematic Instruction" of this series contains an in-depth treatment of this topic.)

5.2 Measure. Testing student attainment of competencies is a crucial part of the CBE framework. It is essential to document student attainment of competencies. And, because the range of competencies is broad, encompassing all three domains of learning, the range of assessment techniques must also be broad. The traditional "paper and pencil" written test is just one of a number of testing devices. Here is a partial list:

ASSESSMENT TECHNIQUES
Performance Test
Situational Observation
Simulation Exercise
Written Objective Test
Written Essay Test
Oral Examination
Product Assessment

All of the above are valid assessment techniques within a CBE framework. The technique most appropriate to assess the competency should be utilized.

Since the purpose of assessment within a CBE framework is to document student attainment of competencies, only criterion-referenced approaches are appropriate. Norm-referenced approaches wherein students are compared with each other provide information in evaluating the relative performance of students with respect to general performance criteria. They do not, however, provide information about absolute competency attainment, rendering them unsuitable within a CBE framework. Thus, the normal bell-shaped curve which guides norm-referenced approaches is not acceptable in competency-based education.

Criterion-referenced testing involves comparing student performance with a pre-set standard. This construct is basic to competency-based education. In fact, some operational definitions of CBE have specified that "... student progress is assessed through use of criterion-referenced measures."

5.3 Certify. Formal acknowledgement of student attainment of competencies via certification is the capstone of the CBE framework. William Spady summarizes:

> If there is any element in this basic definition of CBE that is unique to the concept, it is that the verified demonstration of competencies constitutes the exclusive criterion for student success, program placement, certification, and graduation. This means simply that when other criteria such as attendance and other means of compiling "credit" are used as bases for record keeping and determining graduation status, then a program is not fully competency-based. (Spady, 1977)

Certification is not ceremonial issuance of a diploma in reward for time served in an educational institution. It is rather official documentation that the recipient of the diploma possesses specified competencies. As such, it is a marked deviation from traditional educational practice.

Exercise I

Checklist

Competency-Based Education (CBE)
in Post-Secondary Institutions

1. Does your college have an official institutional commitment to CBE? _____

   If "yes" by whom and in what form? _____

   _____

2. What forces generated the CBE commitment on your campus? _____

   _____

3. At what stage are you in your plan to implement CBE? _____

   _____

4. Have you adopted an official operational definition of CBE? _____

   If "yes," please write it below. _____

   _____

   _____

   _____

   _____

5. To what extent does your CBE approach emphasize:

	Much	Some	Little
a) Systematic instruction	____	____	____
b) Accommodating Individual Differences	____	____	____
c) Recycling of students needing more time to learn	____	____	____
d) Criterion-referenced testing	____	____	____
e) Formal certification of competency attainment	____	____	____
f) Learning activities keyed to objectives	____	____	____
g) Publicly-stated objectives shared with students	____	____	____
h) Objectives at the various levels of specificity:			
Unit	____	____	____
Course	____	____	____
Program	____	____	____
Institutional	____	____	____
i) Validation of course content	____	____	____
j) Official certification on the basis of competencies attained	____	____	____

VI. WHAT ARE THE IMPLICATIONS OF THIS VIEW ON CBE?

The elements discussed so far illustrate the manner in which CBE programs have pursued the logic of a focus on outcomes. Some of these implications include:

1. The shortest distance between two points is a straight line. If you want to get a student from point A to point B, develop the best educational sequence for him and choose materials consistent with getting him there. As long as the outcomes are the same, a number of sequences and modes of learning can be used.
3. Not everyone can or will get there in the same time. Just as students learn in different ways, they also learn at different rates. Thus one would hold the outcomes constant and vary the time (and/or extra help) to get there.
4. If you are going to base your course on outcomes, tell students what they are. Their grade should be based not on what they have to do for the course (write 10 papers, attend class, etc.) but how well they are able to perform the required competencies (achieve 90 or above on 2 exams, fill a prescription according to predetermined criteria with 100% accuracy) for the course.
5. If the end of instruction is to enable someone to reach a particular level of competence, why instruct those who have already attained that level? Better to test out those students who have the ability (or develop an enrichment plan if they wish it) and concentrate on helping those who most need your help to reach proficiency.

VII. FACTORS INFLUENCING THE DEVELOPMENT OF CBE

Demand for Accountability

With legislatures passing minimum competency testing in 38 states, scrutinizing and cutting back higher education dollars, the need to certify that students have achieved a particular level of skill by the time they receive a college diploma is clear. Some unhappy students have even taken this issue to the courts. Citizens have also demanded greater accountability. The results of these pressures have been greater experimentation, a movement toward greater reliance on out-of-classroom competence testing (national tests, feedback from employers, college licensing boards or state exit tests), and a need for more explicit course descriptions, academic standards, and catalogue descriptions.

Research and Development Efforts

A number of research centers were created in the 1960's to do basic research and development in education. Efforts were made to apply in the classroom what was learned through research. Systematic instruction, learning theory, curriculum materials, instructional media, new concepts of evaluation, behavioral objectives, and other elements were tested in various schools. What was perhaps most notable about these efforts was that so many people were paying attention to and studying what worked and what didn't to produce particular learning outcomes. This research formed an excellent base for making instructional decisions.

Conceptual Bases

Mastery learning, developmental stage theory, and the movement away from group comparisons to a focus on the individual learner have all contributed

to the emergence of CBE as a theoretical construct. Concepts such as life-long learning,relevance in curriculum, process curricula, interdisciplinary education, experiential learning, general education reform and the information explosion have influenced the focus of the curriculum development process in CBE. To this list of factors influencing the development of CBE, Schalock (1976) adds the application of general systems theory (e.g. programmed instruction, job performance measures and work samples, applied performance testing, crition-referenced testing, accountability, management-by-objectives, and Planning Program and Budgeting Systems) to the instruction and program improvement process. It is not necessary here to delve into each of these, It is important to note that CBE has taken concepts from each of these theories:

From mastery learning, the concept that most students can learn: It is the task of the instructor to find the means.

From developmental stage theorists, the idea that learning occurs in progressive stages and should be sequenced from where students are to the next highest state.

From Carroll's redefinition of aptitude, the idea that aptitude is not something innate or given, but rather a function of time.

From a focus on the learner, we get a concern for criterion-referenced testing over norm-referenced testing, for diagnosing learner needs, for teachers who facilitate learning and create a responsive learning atmosphere.

From an emphasis on life-long learning, we get a focus on life skills and the idea of a continuum of competence (i.e. defining competence in an hierarchical sequence).

From the demand for relevance, we get an emphasis on designating competencies through careful study of skills needed to perform particular career or adult tasks.

From process curriculum theorists, an emphasis on generic processes (e.g. analyzing, communicating, problem-solving, etc.) in disciplines over prescribed content (the "exposure curriculum").

From the information explosion, a desire to streamline educational competencies to those most essential to effective adult functioning and to those most likely to enable a student to be a life-long learner.

From experiential learning, we get a need to equate and give credit for comparable nonclassroom experiences as well as a model for personalized learning options (learning contracts, work/study projects, etc.)

From interdisciplinary educators, we heard a desire for a focus on those processes which not only transcend particular disciplines but merge several.

From the movement toward a redefinition of general education, a clear mandate to make explicit the skills, knowledge and attitudes which should characterize a generally educated person.

Looking for the Bottom Line

CBE is, as Hall and Jones (1976) aptly express it, a "process for the improvement of education." So it is both a process and a framework which requires a deep re-examination of what we teach, how we teach it, and how we assess it by asking u to base all of these consistently on an explicit notion of competence. Users of competency-based approaches have focused on different aspects when asked what they thought was in CBE. Some examples: "It's a decision to spend more time testing and less time instructing. Testing becomes as much an art and science as teaching; it becomes more a part of the learning process." "If nothing else is different, at least now we can certify what students can do when we give a grade in a course." "Students

have more options for how to learn, yet faculty have more control over learning and more consistent standards." "CBE is a way to make decisions about what and how to teach. If it doesn't relate to the outcomes you've defined--don't teach it." "Exit tests, certification tests, departmental tests are all examples of what CBE can lead to." "CBE is a way to teach the skills you find after you analyze a job to determine what someone needs to know to do that job well--e.g., what are the skills needed to be an operating room technologist?" "CBE is a way to improve teaching by making unclear, unorganized, or unfair teachers clearer, more organized, and more fair." "The most important product in CBE is a list of specific outcomes. I can envision a time when we computerize these lists so that a person would just punch in an identification number to the computer and get a print-out of all the skills that student had mastered."

Probably the most important reason these people highlight different aspects of CBE is that they have been trying to respond to different needs. Vocational programs have often been competency-based, yet they have not always had the teaching tools--a format for sharing expectations with students, objective criteria for rating on-the-job performance, modules to individualize instruction, etc. General education programs in community colleges are faced with declining enrollments, declining skills, and content "inflation"--each problem requiring a new approach from faculty. Developmental studies programs must compete for funding with other programs and hence find ways to maintain standards accepted by the rest of the institution without requiring the other departments to bear all of the possible extra cost of low student/teacher ratios. CBE is certainly not a panacea for these many problems, but it is a conceptual framework and a process for responding to them.

VIII. DIFFERENT APPROACHES TO CBE

Developmental educators and generalists in education took different directions in CBE. Developmental educators were faced with the awesome task of taking students wherever they are and bringing them up to "college level" as rapidly as possible. This task was quite consistent with one of the key tenets of CBE--diagnosing where someone is in a given competence area and then treating for deficiencies while giving credit for accomplishments. Yet this task was so overwhelming, since students ranged from nonreaders to 7th and 8th grade or higher in developmental programs, that faculty had to seek the most appropriate starting point. Research suggests that helping low achievers experience/achieve success requires breaking skills and knowledge down to component parts to bring them to competence and to a more life-long ability to learn. Since CBE includes this idea, developmental studies faculty have frequently adopted the CBE approach. Mastery of basic skills is their focus. A second important idea in developmental studies is the concept of learning as a developmental process. Learning can be seen as a process on a continuum--from lower to higher order abilities. This idea is also important to CBE.

This latter idea has been important to the general education models of CBE which have evolved. General education on most campuses is usually not the result of an attempt to create an integrated experience. Rather it is more like a collection of courses. It is often radically different from campus to campus. Since general education is where most colleges have their only opportunity to leave a general (non-major) impact on students, this is particularly true in the community college where the many important non-academic outcomes of dormitory colleges are not present.), general education has increasingly come under fire--as a random package meant to gain FTE to pay

for other courses, irrelevant to future student needs, and ineffective. Yet people from most parts of the academic community and society agree that there are some important skills, knowledge and attitudes that might be a part of one's college education. Curriculum change, then, has been one major initial force for liberal arts or general education models. Competency-based education was a natural vehicle for this change because it asked first that one begin with a concept of competence and then reinvent curricula to meet the model of competence thus developed.

CBE in general education has also been associated with a trend toward a more process-oriented (versus a content-oriented) approach. This last aspect marries well with the idea of a developmental approach to learning, since knowledge and skill acquisition--if viewed as part of key generic processes like problem-solving--can be sequenced in developmental, hierarchical stages (see example, Figure 5).

Vocational educators had a different model of competence on which to build their competency-based programs. For them, very explicit tasks to be performed by their graduates became the outcomes of their courses. Licensing exams added to the list of known outcomes their students had to reach. For these reasons, the idea of doing a task analysis of the many job-related tasks one does in a given profession proved popular with vocational and technical programs.

These programs were not alone, however, in wanting to base their idea of competence on a real world application. General education programs also sought to define generic life skills by looking at roles people have to play as adults. Oregon even defined competencies for the state public school system based on the roles people perform as adults, parents, consumers,

FIGURE 5

Example: Problem Solving

Rationale

A problem may be defined as a discrepancy between the real and the ideal, or perhaps in terms of a need, a frustrated goal-directed activity, an hypothesis to be tested, or an imperfect gestalt where the relationship between parts and wholes is inconsistent. Systematic and logical problem - solving processes result in removing such discrepancies or anomalies and lead toward the gaining of new knowledge about oneself and the world. Therefore, effective problem solvers are able to analyze a problem into its component elements, recombine these to form alternatives, reach a solution, put it into action and evaluate the ensuing results. Effective problem solvers are sufficiently flexible so as to be able to implement this process in a variety of contexts and situations.

Generic competencies

Specifically, a student with a baccalaureate degree from a public university in Florida is able to:

1. Define a problem and impose form and structure on its elements, drawing upon models derived from a variety of disciplines;
2. Diagnose plausible causes of a problem;
3. Propose alternative solutions and assess their probable effects;
4. Select a solution and attempt to carry it out;
5. Evaluate the results of an attempted solution;
6. Infer the applicability of a solution to related problems

employees, etc. Oregon has probably gone the farthest of any state system in insisting that teachers look for real world applications of academic concepts as a basis for student projects and the testing of students.

Another fairly new area to embrace CBE is that of credit for experiential or prior learning. Those who would award credit for field work or work experiences had to have a way to equate these experiences to traditional classroom instruction. If they could assure classroom teachers through testing that students had met the same competencies, they could safely award credit. Similarly, credit by examination programs will soon need to pass this same test. These nontraditional routes use competencies not only as a kind of universal language but also as a basis for validating a testing experience. This practice is not unique in CBE, since most programs do eventually include experiential learning options, but these programs have been some of the first to build in, as a regular feature, a separation of duties between those faculty who facilitate learning for students and those faculty who assess whether or not competence has been attained. This idea of external assessment is often viewed as a major benefit. For example, in a writing laboratory in Kentucky, faculty who work with developmental students report that they can work much more effectively with students when they know they will not have to give the final grade. The grade is given by a panel of English teachers who are charged with rating a portfolio of student work against present department criteria. For many faculty, this has been a way of freeing them. For experiential learning programs, the student may work out some competencies with a faculty member, but will attain them on a job. It makes sense, then, for the supervisor to help assess whether or not the student has indeed attained these competencies.

It's easy to see that each model has given to or taken from CBE that portion which best suited its needs. We have not dealt with all approaches. Some programs, for example, have taken what they now do and rewritten their course outlines in terms of competencies. Certainly this is beneficial to students since it gives them a clearer idea of what they need to be able to do by the end of the course. Yet we believe a major thrust of CBE is the opportunity it presents faculty to re-examine what and how they teach for potential improvement. We hope for excellence in teaching, and we know that the goal requires of faculty a continual search for ways to improve their courses. We hope you, too, will not want to miss this opportunity.

Exercise 2

1. When focusing on desired outcomes, what are four logical implications?
   a.
   b.
   c.
   d.
2. Looking at the following types of programs, briefly explain how each evolved a different approach to CBE.
   Developmental programs: _____
   _____
   _____
   Vocational/technical process: _____
   _____
   General education: _____
   _____
   _____

IX. THE BASIC PROCESS

The actual process of designing a competency-based course is not unlike designing any other course in a systematic fashion except that one designs the "final examination" for the course before designing the syllabus. In CBE, "teaching to the test" is not a negative concept but rather a conscious strategy. (See Figure 6) Faculty will quickly see that the trick is to come up with a good, comprehensive way of testing the desired outcomes.

The basic process of CBE can be outlined thus:

1. Determine your values about instruction, education, this course in particular. (This forms the rationale for your course.)
2. Define the outcomes you expect.
3. Design a comprehensive, summative assessment.*
4. Develop varied, personalized learning strategies to help students reach the competencies.
5. Create a management system for keeping track of competencies met, learning options chosen, etc. for each student.
6. Evaluate your course and refine it.

Faculty and Student Roles in CBE

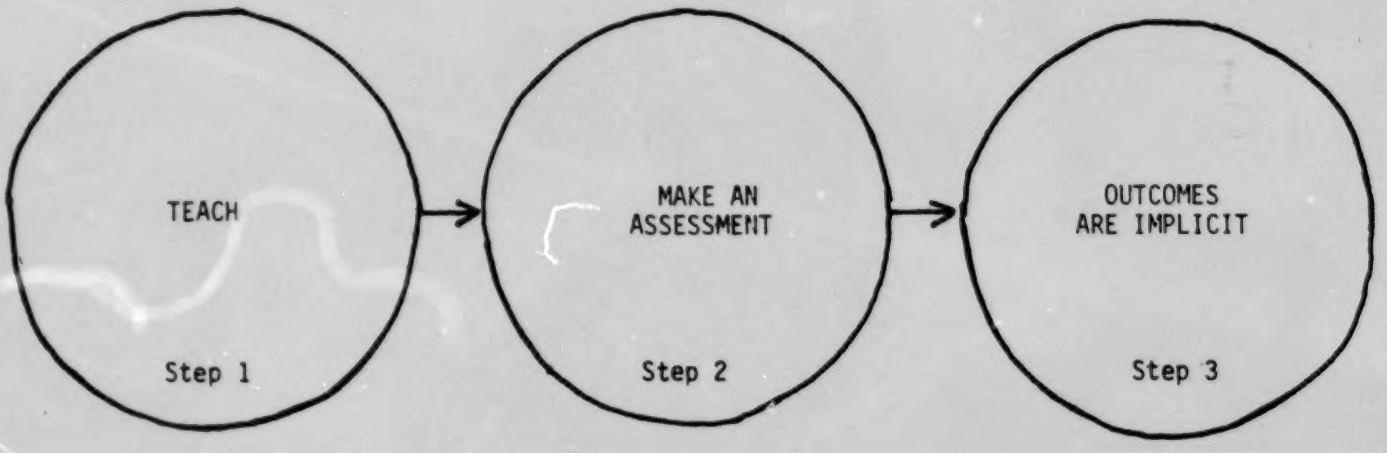
One way to make the experience of teaching in a CBE program more concrete is to look at what the major participants experience in such a system. Faculty may be asked to adopt new roles--e.g. diagnostician, facilitator of learning, counselor, assessor, etc. One faculty member said "I never spent so much time negotiating with students in my life!" Several students commented on the fact that in a competence program, teachers and students were on an equal footing. Students must become actively involved in making their educational activities personally relevant. For some, this requires a little coaching in

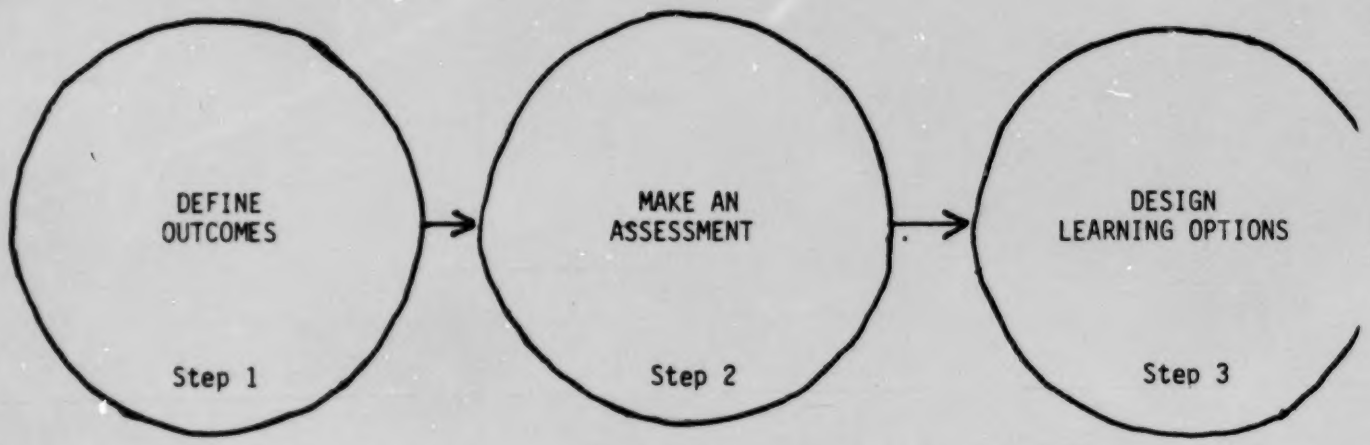
---

*See glossary.

FIGURE 6

Traditional Programs





goal setting, planning, and time management. Students with extreme test anxiety are not likely to take well to frequent testing or taking tests in an assessment center without some special counseling. For the most part, though, a competence program builds confidence in students by affirming and certifying what they've learned.

Like faculty, students are faced with a period of an explosion of information, rapid change, consumerism, and unpredictable job markets for college graduates. The CBE approach not only avoids unnecessary duplication in courses or in skills already mastered, but also gives job-relevant, core abilities common to effective functioning in a number of adult roles. By helping students acquire these abilities and certifying that they do have them, you can build a student's confidence and feelings of self-worth. Students have definitely benefited from this approach.

What Might a Day in a CBE Program Be Like?

While most programs evolve somewhat different scenarios than the one which follows based on the need to adapt to local policies and procedures, the following might serve to illustrate a day in the life of a student enrolled in a communications course in a competency-based program.

Jean finished her writing requirements last week by completing the three-essay series for test-out. Her pre-test results indicated a need for work in "listening for the main idea" and for "identifying nonverbal behaviors." She has contracted with her instructor to demonstrate these two skills by viewing a video tape the instructor made of a small group meeting with five students in the Learning Resource Center. She will not be attending class today but will turn in her report at the next class session. Later today, she

hopes to have a conference with her instructor to see if she can work on an individual project that she's come up with which is related to her major and which ties together several of the competencies for this course which she has not yet demonstrated. Jean is a particularly resourceful student and in a hurry. While she knows many of her peers enjoy the large number of supporting materials the instructor provides for those having trouble meeting the skill level necessary to complete the course, Jean enjoys the variety of ways she can demonstrate competence, the choices she gets to make, and the opportunity to work at her own pace. Since Jean is skilled in communication, she hopes to finish early so that she can spend more time on her psychology course. Most of all, Jean and her peers like getting credit for what they know and being able to concentrate on learning what they don't know.

For Jean's instructor, we can see that he had to (1) identify specific skills to be demonstrated in the course, (2) find or develop a pretest sensitive enough to assess present skills and areas of weakness, (3) define and state criteria for acceptable performance of each competency, (4) develop or find a number of curriculum modules at different levels of difficulty, (5) create assessment materials for out-of-classroom use, and (6) set up a management system that not only keeps track of each student's progress, but also keeps track of all of these materials--where they would be kept, in what quantity, etc. On a more personal level, he had to be willing to equate a variety of activities to competencies, to accept learner initiative in selecting content, to be open to nontraditional combinations of learner tasks, and generally to be able to tolerate a great deal of complexity and ambiguity.

Fortunately, few faculty are asked to do all of this overnight. It takes time and practice to develop (or even locate) good tests and curriculum

materials. Most faculty evolve a system over several years and continue to refine it. Jean is helping him develop his course, too, by designing an individual project in a particular career field. If it works, he can place this idea in a card file for possible use by other psychology majors later on.

This instructor has also had to be very organized. Many faculty evolve (1) criteria rating sheets for giving feedback to students, (2) a record sheet which lists each competency and the level of attainment each student has reached, (3) and a contract form which requires the student to define a short-term learning objective, a time table and strategy for meeting it, and a final deadline for assessment of that objective. A final requirement in most schools is the development of a grading plan which equates competence attainment to each letter grade.

X. POST TEST

1. What historical trends and events have influenced the development of CBE?

2. What things--activities of administration, faculty, staff, and students--make CBE <u>different</u> from other, earlier ways of teaching?

3. What are the six basic steps in the process of competence-based program development?

   1.

   2.

   3.

   4.

   5.

   6.

Answers: Refer to

1. Pages 20 to 23
2. Pages 29 to 33
3. Page 29

PART B:

APPLYING THE CONCEPTS

I. OBJECTIVES

By the end of this section, faculty will be able to

1. Write effective, concise rationales.
2. Write competence statements at each of the 4 levels of the competence hierarchy.
3. Design a sample assessment with appropriate criteria.
4. Suggest alternative ways to assess a given competence.
5. Design an outcome-based grade contract for one of their courses.
6. Suggest ways to personalize learning for special student needs.
7. Assess their current use of the different components of CBE.

II. SETTING THE TONE

Writing a rationale for a course or unit of instruction is basically an exercise in values clarification. You are trying to share what you believe is important about learning--and this course's learning in particular--with students. A good rationale statement is personal, inviting, and convincing. Students reading it should feel that you feel that this course (or unit) is important to them personally.

A good way to capture these qualities is to begin by thinking about your values about education. What do you think an education should provide students? How can this course help do that? How do people learn? What important qualities should characterize a graduate of your course?

Exercise 3

One approach to identifying the most important outcome of your course is to ask yourself to picture a particular student five years from now. What is he or she doing that he or she could not do before taking your course or

that is most consistent with your hopes for students who take your course:

_____

_____

_____

Compose a rationale (theme statement) for your course which states why you believe the course is important and what you hope students will gain after taking the course.

_____

_____

_____

_____

_____

_____

A sample theme statement for a workshop on competency based education might be:

> As more and more is learned about ways to deal with our new students, the need for clearly defined outcomes, for a more personalized and responsive learning environment, becomes clear. Furthermore, we add our commitment to the affective growth and development of students in emphasizing a personalized approach to CBE. Because these are elements of a personalized, competency based approach to instruction, we know you can make success for new students more predictable by using CBE.

You should also begin with a statement of your concept of competence. This gives clear direction to all who must write competency statements and/or work or learn under such a system. It defines the type of approach to CBE your college or program will take. Some samples collected from a number of different colleges follow:

*Some Descriptions of Competence and Competence Statements

Florida State University

> An attainment consists of three principal elements: 1) a generic behavior or knowledge area, 2) an assessment task(s), and 3) a present standard of performance made public in advance of the assessment.

University of Houston

> Competence statements are derived from the role of the practicing professional, explicitly stating what the learner is to demonstrate for successful completion of the program, and made public in advance of instruction ... may include cognitive objectives, with primary emphasis on performance and consequence objectives ... an emphasis on the "ability to do."

Institute for Competence Assessment (Pottinger; Klemp, McClelland)

> Competencies are interactive learning outcomes where skills and abilities are integrated.
>
> From the standpoint of competency-based education, it is the meaningful integration of life skills that is important as an outcome of the educational experience.
>
> The implication for CBE is that one cannot assume that abilities or skills discretely learned will be integrated in work and life functions and consequently, that establishment of minimal levels of performance on isolated skills of sub-competencies have much meaning in themselves.
>
> Generic competency indicates clusters of action patterns that have a variety of action possibilities that can be measured more reliably to get indexes of various competency domains central to various life outcomes.

Fund for Improvement of Post-Secondary Education

> Competence is the state or quality of being capable of adequate performance. Individuals are described as competent if they can meet or surpass the prevailing standard of adequacy for a particular activity.

Richard L. Meeth

> "The minimum knowledge skills, values, and/or attitudes a person can be certified to possess based on a set of criteria or level of expectation."

*Excerpted from our unpublished materials collected by John McBrayer, West Central Wisconsin Consortium, La Crosse, Wisconsin.

Competence statements continued:

Mars Hill College (Robert E. Knott)

> Competence may be defined as the state of having requisite abilities or qualities. A curriculum designed around competencies consists of at least three basic elements: first, an overall statement of competencies to be acquired for a successful completion of the program; second, sets of evaluative criteria and standards for each competence which define the scope and level of proficiency required for successful attainment; and third, sets of experiences designed to assist the student in attaining the required competencies.

Stanley Elam (AACTE)

> Competencies are knowledge, skills behaviors to be demonstrated by the student.

Alverno College

> The notion of competence as a characteristic of the individual person rather than an enumeration of tasks. A competent student demonstrates certain abilities ... The kinds of competence we are now seeking to foster do not develop in the abstract; they are developed only as an individual student works in the full context of academic and professional disciplines. The college has eight competence areas with four general levels and two specialized levels of or competence attainment.

Bowling Green State University (G. Woditsch, 1976)

> "Competence" is a close surrogate for the word "capability" ... We need to grasp three things before we ascribe competence: 1) the behaving organism; 2) the demand it is striving to meet; and 3) if and how well the demand is met.

III. WRITING COMPETENCY STATEMENTS

Writing a statement of the competency you expect students to demonstrate is not a simple matter of adopting a particular sentence format. Instead, it should be the result of careful thought on your part about the mission of your institution, the goals of the program of which your course is a part, and finally the picture you have in your mind of a competent graduate of your course.

We begin, then, by looking at the various levels of outcome statements:

Institution: These are mission or purpose statements. All colleges state their basic philosophy in college catalogues, self-study documents, etc. These statements are generally quite value laden. CBE asks that you consider, how can my course help my college achieve its mission with our students? Sample: To provide equal access to higher education for all, to communicate effectively, etc.

Program: Whether your course is a part of a specific occupational program like nursing or part of general education, there is generally a statement of the goals of the program. These might relate to effective performance of roles related to the career, or, in the case of general education, to knowledge and skill in areas traditionally associated with the arts and sciences. Sample goal: A generally educated person is able to communicate effectively in a variety of modes, within the limits of his/her physical handicap(s).

Course: Various courses were originally conceived as a part of the whole that is defined in the program goals. Thus it is necessary to again ask, How can your course further the institutional mission and your program goals? What part of the whole must this course cover? What is your vision or model of competence (i.e., five years from now, what one thing would you hope your former students can still do/know)? Sample: By the end of this course, the student will be able to communicate effectively in writing. This means that she will maintain average or above skills in each of the criterion areas for at least three essays. Competence will be measured not by the score attained for each criterion measure, but on her ability to handle all parts of the essay sufficiently to make it "work."

Unit: But how does all of this break down into what you are going to do on Monday? The unit objective is the greatest level of specificity in the

competence hierarchy and is a behavioral or performance objective. Yet, this objective is contingent on and congruent with the model of competence begun all the way back in the mission statement. It looks like any other objective, hence the form is similar. Yet how it is derived is quite different. This difference--the formation of a concept of competence--is one of the unique contributions of CBE. Sample: By the end of this unit, the student will be able to write an essay of approximately 300 words which expresses and supports an abstract idea. This means that: the essay will have a statement of the idea to be discussed; the essay will define and give examples or other details to explain the idea; the essay will be about an idea that is not observable, not an event but rather a belief, principle, theory, etc.; the essay will meet basic skill criteria, e.g., will be legible and reasonably accurate in terms of grammar, punctuation, and spelling.

As an aid to writing your own competencies you may want to use the following format*:

Course Competency: Upon completion of the course _____ (Title of Course), you will be able to _____ (Performance Verb) _____ (Content Area).

Your ability to demonstrate this competency will be evaluated on the basis of the following criteria:

*Adapted from Barbara Gray of Miami-Dade Community College

FEEDBACK SHEET Student's Name_____

Competency: _____

_____

Criteria	*Rating Scale		
	1	2	3
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
etc.			
N. Overall, the student is able to put all of these skills together to demonstrate _____ (competency).			

*Ratings should be given a specific designation: e.g. high, middle, or low; 90%, 75%, below 50%; etc.

Note that the criteria are really more like specific behavioral indicators that the competency is present while the rating scale tells the student how well he or she must do. This format is especially useful for both giving specific feedback to students, and for keeping records which can document a student's progress toward competence attainment.

Exercise 4

Develop your own feedback sheet for one competency statement. Experimentally use it with one assignment to determine whether or not it needs revision. (Since you want the criteria to serve as feedback, you will want to write them in student-oriented language and to make them self-explanatory.)

FEEDBACK SHEET Student's Name_____

Competency: _____

_____

Criteria	Rating Scale		
	1	2	3
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
Overall, the student is able to put all of these skills together to demonstrate _____ (competency).			

Several models of this competence hierarchy are offered here. While the format you use for writing a competency statement is important, even more important is that it is logically linked to institutional competencies. (See figure 7a & b.)

Figure 7a

SAMPLE BREAKDOWN OF ONE COMPETENCY

COLLEGE COMPETENCIES	DEMONSTRATE HOW TO USE AND ACQUIRE KNOWLEDGE		
	AUTOMOTIVE REPAIR	WELDING (PORTLAND COMMUNITY COLLEGE)	ELECTRONICS
Program Competencies	Understands tasks Required of a Diesel Service Mechanic	Knows how to weld using the four major welding processes	Understands calibration procedures and schematics of electric circuiting
	DIESEL ENGINE DIAGNOSTIC TUNE-UP (PEC)	OXY-FUEL WELDING	JUNIOR ELECTRONIC TECHNICIAN
Course Competencies	Understands Dynamometer test	Knows how to do oxyacetylene welding (OAW)	Understands calibration
	DYNAMOMETER TEST	OXYACETYLENE WELDING	CALIBRATION OF OSCILLOSCOPES
Course Modules or Sub-Course Units	Understands procedures for emergency shut-down	Understands and can do oxygen cutting	Understands oscilloscope wave forms
1 Means of Assessment	Given a specific engine, demonstrate the precise manufacturer's procedures which are required in case of emergency shut-down	Freehand, the student will select correct material and then cut to specified dimensions in the A. Flat Position B. Horizontal Position C. Vertical Position	Use the various controls on the oscilloscope to properly display wave forms

Figure 7b

SAMPLE BREAKDOWN OF ONE COMPETENCY

COLLEGE COMPETENCIES	DEMONSTRATE COMPETENCY IN VERBAL COMMUNICATION	
	ASSOCIATE DEGREE NURSING (ADN)	GENERAL EDUCATION PROGRAM
Program Competencies	Uses communication skills as a method of data collection, nursing interventions, and evaluation of care	Can identify strengths and weaknesses in his/her speaking and writing
	DATA COLLECTION	
Course Competencies	Understands and can accomplish admission procedures	Can identify personal strengths and weaknesses in composing an essay
	INITIAL PATIENT INTERVIEW	
Unit Competencies	Understands procedure for a patient interview	Can identify personal strengths and weaknesses in writing an introduction to a paper
1 Means of Assessment	Without assistance and/or supervision, satisfactorily perform a patient interview on one of your classmates. Follow procedures discussed in class.	When given a checklist of the characteristics of well written introductions, can identify strengths and weaknesses in the introductions of 3 of his/her papers; in the identification will closely match that made by his/her instructor

Exercise 5

A BREAKDOWN OF 1 COMPETENCY

To try your hand at writing competencies at each of the 4 levels of the competency hierarchy, fill out the exercise below:

COLLEGE COMPETENCY

PROGRAM COMPETENCIES

COURSE COMPETENCIES

COURSE MODULES OR
SUB-COURSE UNITS

1 MEANS OF
ASSESSMENT

We have just illustrated an extremely oversimplified version of the competency identification process. Thus, we have attached for your information an excerpt from competencies developed by faculty from two community colleges and three universities in Florida*. Faculty from these institutions met and brainstormed those general education outcomes they'd expect from a college graduate. (Appendix, p. 65) They then rated and categorized each statement until they arrived at a series of generic competencies with subcompetencies. At this stage, they sought expert help in analyzing these competencies further to refine the subcompetencies to determine whether they were hierarchial and/or developmentally sequenced and to evolve rationale statements for each competence area. By project's end (one year later), project faculty still felt a need to refer to their competencies as a "working draft" (See Appendix, pp. 66-68). We share this project's stages of development not only to illustrate a process (faculty from the two types of institutions came to share some common goals and bonds), but also to illustrate the difficulty inherent in reaching consensus on competencies. Most programs have reached a point where they have had to accept the tentative nature of their competencies and have decided to revise them as a result of pilot testing them in actual programs. Furthermore, many faculty feel that the process of bringing together a number of faculty, especially faculty from different disciplines, to try to reach consensus on the desirable outcomes of education, is itself as efficacious as the competencies.

Whatever level you or your institution chooses to start with in defining outcomes, we hope you will begin by defining a concept of competence.

---

*Adapted from the Florida Competency Based Articulation Project Final Report, 1978.

Exercise 6

Which of the concepts of competence on pages 37-38 is closest to your own?

_____

_____

_____

How would you amend it? _____

_____

_____

_____

The basic definition of competence serves as a guide for your selection of competencies at each level of the competency hierarchy.

Exercise 7

As a start in your search for the proper outcomes of your institution, rank order the top five from Figure 10 (p. 66) (those most important to you).

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

At this point, collaboration with colleagues would be ideal. One of the most important aspects of the development of institutional competencies is the opportunity it provides for people from throughout the institution and its community to meet together to talk about teaching and learning and the mission of <u>their</u> institution in particular. We hope you'll be able to pull together a team to spearhead such a venture!

IV. ASSESSMENT

Assessment is the judgment that you make on the basis of predefined criteria and one or more samples of student work that a student has or has not demonstrated a particular competency. Bloom distinguishes between diagnostic, formative, and summative evaluation. (See Figure 8.)

For our purposes, we will concentrate on summative assessment, since this is common to all levels of competency programs

Summative assessment is that point in a course or program when a faculty member or a group of faculty make a decision about whether or not a student has attained all of the competencies. An exit test for a college, a departmental exam, a cumulative final exam are all examples of summative assessment. Unfortunately, many of these tests are not based on competencies nor measured against predefined criteria. CBE proponents hope to change this. They ask that a faculty member design a competence test which captures the composite knowledge, skills, and attitudes a student is to demonstrate in a semester. This test can be the diagnostic test in the beginning of the term as well as the summative test at the end. In any case, it concretely clarifies for both the faculty member and the student where the course is headed.

FIGURE 8

ASSESSMENT

Type	When Used	Defining Characteristic	Function
Diagnostic	Entry, Ongoing	Prescriptive	For Placement, To Identify Needs
Formative	Continuous	Developmental	Feedback On Progress, An Aid To Learning
Summative	Exit (This is the time when you sign-off on whether or not the student has demonstrated the competence)	Holistic (Measures which are open-ended, which test the student's ability to integrate specific knowledge, skills, and attitudes should be used here.)	Overall Assessment of Competence

Exercise 8

There are many ways to test students (observation, student products, demonstrations, oral presentations, video tapes, paper and pencil reports/tests) yet we usually use only one of these ways--paper and pencil tests. Refer to the assessment strategy you developed in Exercise 5. What other ways could you assess this competency?

a. _____

b. _____

c. _____

d. _____

e. _____

A key idea in competence assessment is that the student should know both the method and the evaluation criteria in advance. Curve grading is the antithesis of grading based on predetermined criteria. How you assign a student a grade is an important decision in a competency-based framework. If credit in the course is to be equated with competence in particular areas, the grading must also be consistent with those competencies. Many faculty have either divided their competencies by different grades (e.g. for a grade of A, you must attain 1-12 competencies; for a grade of B, you must attain 1-10 competencies; for a grade of C, you must attain 1-7 competencies, etc) or used rating scale levels to differentiate between excellence, minimal competence, and unsatisfactory performance. For the faculty members this type of grading system responds to the concern reflected by the distraught student who says "What do you mean I got a C? I did all of the work and attended every class!" It is not always what he or she did that demonstrates competence but often how well he or she did each assignment.

Exercise 9

Writing Your Own Competency-Based Grade Contract

For a grade of A you must be able to: _____

_____

_____

_____

_____

For a grade of B you must be able to: _____

_____

_____

_____

_____

For a grade of C you must be able to: _____

_____

_____

_____

_____

V. PERSONALIZED LEARNING OPTIONS

Once you have defined your course outcomes and developed assessments with criteria for those competencies, you will want to think about ways students can attain the competencies. No brief introduction can do justice to this topic. There are many books and modules on ways to personalize learning. For our purposes, it might be helpful to think in terms of ways that you can provide the widest assortment of learning possibilities, flexibility in time required for course completion, and still remain sane! Most

faculty begin by creating a test-out feature which allows early completion of the course. By making whatever testing process is used available in a learning resource center or testing center, the instructor enables students to take the test at staggered times. In this way, they acknowledge that the first way to help students attain competence in their course, is to find out what students can already do, and then to identify what they will need help to learn. A second step is to look for alternative ways to teach the content of the course. Are there optional books, films, experiences which students may elect in lieu of the usual course outline? A big help here is to work with students during the grade contract process to develop a personal project. These projects can eventually serve as an idea bank for later students. The major theme in personalizing learning is not whether you use modules, cognitive mapping, or some other new tool, but whether you can find simple ways that work for you to make learning your subject a personal experience for each student. Sometimes just talking with a student to relate their interests to course outcomes can make the course more personal. Certainly you will find it easier to make connections between the subject and the student's present or future world if you know more about him or her.

We are not suggesting that smaller classes will solve the problem of alienation among community college students. Indeed, the task seems to be how to remain personal with more and more students. This is why we emphasize finding a simple way and one that works for you.

Exercise 10

Many people feel that an important way to personalize learning is to find out how students learn best. Although there are many commercially available learning style inventories, you might want to simply ask students how they prefer to learn a new subject.

Design a quick, easy-to-administer questionnaire to determine the media your students prefer (film, slide, tape, books, oral, etc.) the type of teaching they prefer (lecture/discussion, tutorial, etc.), and what they personally like to do to learn (work in groups, field work, hands-on, programmed texts, product development, etc.). Have students place a check next to each mode they prefer to use. Jot down below the items you will use in constructing your questionnaire.

Media: _____

_____

_____

Teaching Styles: _____

_____

_____

Learning Options: _____

_____

_____

Exercise 11

Equally important to assessing learning preferences is to assess the potential deterrents to learning of individual students. Quick questionnaires and pre-tests may again suit your needs. Consider developing questions in terms of the following categories: situational deterrents (e.g. no baby sitter 1 day/week), ability deterrents (e.g. reading level of text is more than 2 grade levels above reading level of students), motivational deterrents (e.g. this course is not seen as relevant to personal goals by students), and psychological deterrents (while you would not test for this, you might want to identify students as early as possible for referral to counselors).

Possible items for a questionnaire:

Situational Deterrents: _____

_____

_____

Ability Deterrents: _____

_____

_____

Motivational Deterrents: _____

_____

_____

Psychological Deterrents: _____

_____

_____

Perhaps the easiest way to think about ways that you can make learning more personal is to think in terms of specific students you've known. We offer below 3 such students and ask you to assume that the students are in your course. How can you help them be successful in demonstrating the competencies for your course?

Exercise 12

PERSONALIZING LEARNING

List ways to personalize learning for the three students whose characteristics are given below.

A male, age 26, who works full-time as a welder is enrolled in your course in Data Processing, as well as in three other general education courses. He wants to complete the Data Processing program in no more than 2½ years. He has come to you and has informed you that he is having difficulty finding time to study for your course, not only because of the other courses for which he has to study but because he has a wife who is bed-ridden and a two-year old child. He has to handle most of the work at home and delivers and picks up the child at the child care center. Additionally, he is having financial difficulties. He is quite capable to doing the work for this course and wishes to continue.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

A woman, age 23, is a single parent with two preschool children. She is enrolled in your beginning typing course and has indicated an interest in completing the secretarial program. Shortly after the beginning of the course, you notice that she is just sitting at her typewriter not doing anything and you find out that she dropped out of school after the 8th grade and does not seem able to read the instructions in some of the course materials. She has not done any of the assignments and has not spoken to you because she said she would be embarrassed. She is on welfare and wants desperately to acquire skills that would enable her to get at least a clerk/typist position as soon as possible.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

A 17 year old nursing major who is blind has enrolled in your general chemistry course. It is obvious to you that he will have difficulty with the lab experiments that are required for the course. He was a straight A student in high choool, and he said that he did not have too much difficulty with his chemistry courses because his school had excellent facilities for blind persons and his chemistry teacher personally helped him with many of his experiments. This is the first week of the course.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

VI. CONCLUSION

Like all curriculum development, competency-based curriculum development takes time. Each step in competence program development discussed here--1. defining competence, 2. identifying competencies at each level of the competency hierarchy, 3. developing assessments and criteria for each competency, and 4. establishing ways to personalize learning--presents you with new challenges. Yet, fortunately, most faculty are already doing many of the things mentioned here. To help you identify what you are now doing with your individual courses that is consistent with CBE, we've included an adaptation of the Criteria for Describing and Assessing Competency-Based Programs from the National Consortium of Competency-Based Education Centers for you to use. You may be surprised to discover how near you now are to having a competency-based course as you were in the checklist in Part A which asked you to look at more general elements of CBE.

Exercise 13

Read these answer categories over carefully. Answer each of the following questions by first circling the number of the answer which best describes how things are. Secondly, answer each of the following by underlining the number which indicates how you would like things to be. Finally, subtract the difference between is and should be.

0 = not at all
1 = to a very little extent
2 = to a little extent
3 = to some extent
4 = to a great extent
5 = to a very great extent

For example:

		Difference
1. To what extent do you provide alternative learning options?	0 (1) 2 3 4 5 ↑ is ↑ should be	____ difference

Exercise 13 (continued)

Measure your course's compatibility with CBE.

I. Competency Statements							Difference
1. Do the competencies for your course carefully consider on-the-job and/or future professional expectations to be placed on the student? (validated)	0	1	2	3	4	5	_____
2. Are your competencies predictors of professional success? (i.e., have you weeded out the chaff--focused on causal abilities?) (predictive)	0	1	2	3	4	5	_____
3. Do your competency statements readily lead to identifying criteria for evaluating tests of competent performance? (measurable)	0	1	2	3	4	5	_____
4. Do your competency statements allow for the variety of learning that needs to occur?	0	1	2	3	4	5	_____
Do they consider: knowledge needed?	0	1	2	3	4	5	_____
skills needed	0	1	2	3	4	5	_____
attitudes needed?	0	1	2	3	4	5	_____
(comprehensive)							
5. Do you re-evaluate competencies during and after the learning program--especially in terms of their relevance to the learner's future effective functioning? (up-to-date)	0	1	2	3	4	5	_____
6. Are the competencies written and distributed before the course begins? (publicly stated)	0	1	2	3	4	5	_____

Competency Statements Self-scoring. Sum of differences _____ ÷ 6 = _____ (Avg. diff.)

Exercise 13 (continued)

II. Assessment							Difference
1. Do you measure only what your competency statements specified?	0	1	2	3	4	5	_____
2. Are your competency measures specific, realistic (especially in terms of matching the testing performance with the desired actual performance--i.e., if testing listening, student actually listens to something), and sensitive to nuance?	0	1	2	3	4	5	_____
a. Tests assure quality and consistency.	0	1	2	3	4	5	_____
b. Provision is made for the influence of setting variables. (sound testing practices)	0	1	2	3	4	5	_____
3. Do your competency measures discriminate different levels of performance based on predefined criteria? (criterion-referenced)	0	1	2	3	4	5	_____
4. Is the data provided manageable and useful to you in making decisions about the needs of your students, their overall competencies, etc.?	0	1	2	3	4	5	_____
5. Have you made assessment procedures and criteria clear to students before beginning instruction? (publicly-stated)	0	1	2	3	4	5	_____

Assessment Self-scoring. Sum of differences _____ ÷ 5 = _____ (Average difference)

Exercise 13 (continued)

III. Instruction							Difference
1. Are your learning activities and materials derived from and clearly linked to competency statements? (consistency)	0	1	2	3	4	5	_____
2. Are your instructional units of manageable size? (e.g., can 90% of the students complete the unit during the designated time period?)	0	1	2	3	4	5	_____
3. Is instruction responsive to individual student needs? (personalized)	0	1	2	3	4	5	_____
For example, can the student dictate his/her own: learning approach	0	1	2	3	4	5	_____
sequence or pace	0	1	2	3	4	5	_____
content (read some of his/her own novels, texts, etc.)	0	1	2	3	4	5	_____
4. Is the student's progress measured by his/her performance of course competencies and continuously shared with him/her?	0	1	2	3	4	5	_____
5. Is student feedback used to review and revise learning activities/materials?	0	1	2	3	4	5	_____

Instruction Self-scoring Sum of differences _____ ÷ 5 = _____ (Average difference)

Based on this pre-assessment, you should be able to identify a good place for you to begin. In which of the three major areas did you have the least difference between what you now do and CBE? Which the most? Perhaps the latter would be a good place to start. By determining where you want to start, you can begin to develop a plan for the gradual implementation of CBE. We sincerely hope you will decide to do this.

Exercise 14

An Action Plan

Objective	Strategy to Meet the Objective	Target Date for Completion

Best wishes to you on this venture!

APPENDIX

GLOSSARY OF TERMS

COMPETENCY-BASED EDUCATION - An educational framework which systematically focuses on student attainment of a hierarchy of publicly-stated and validated intellectual, attitudinal, and/or motor learning outcomes (competencies) and the concomitant instructional processes that facilitate, measure, and certify such attainment.

COMPETENCY - An acquired intellectual, attitudinal, or motor capability derived from a specified role and setting, and viewed as a composite of behavior either broad or specific.

INSTITUTIONAL LEVEL COMPETENCY - Broad communicative, social, personal, scientific and problem-solving knowledges, attitudes and/or motor skills required by all degree and diploma students.

PROGRAM LEVEL COMPETENCY - Broad knowledges, attitudes and/or motor skills needed for successful completion of a program of instruction within a college.

COURSE LEVEL COMPETENCY - Knowledges, attitudes and/or motor skills needed for successful completion of a course of instruction within a program.

UNIT LEVEL COMPETENCY - Those precise knowledges, attitudes and/or motor skills needed for completion of a unit of instruction within a course.

CRITERION-REFERENCED EVALUATION - The assessment of student performance in terms of pre-set standards.

LEARNING ACTIVITIES - Those learning experiences engaged in by students to enable them to attain specific competencies.

LEARNING RESOURCES - Materials, equipment, or resource personnel used in learning activities.

PERFORMANCE CRITERIA - Standards by which acceptable achievement of students learning outcomes are measured.

PRE-ASSESSMENT - A criterion-referenced evaluation of the student's existing skills, attitudes, and/or knowledges before the learning activities are begun.

POST-ASSESSMENT - A criterion-referenced evaluation to document student attainment of competencies at the completion of the learning activities based on the conditions and standards stated in the competencies.

FIGURE 9

(An Excerpt from Working Draft I)

BACCALAUREATE COMPETENCIES

An individual with a baccalaureate degree from a public university in Florida will be able to demonstrate the following skills with the following content:

PROCESS SKILLS	CONTENT
1. Recognize the existence of a problem	1. Steps in varieties of problem-solving processes
2. Identify elements of a problem	2. Consumer problems
3. Formulate questions about a problem and seek appropriate information	3. Mathematics
4. Locate and collect information sources for the study of a problem	4. Personal finance
5. Formulate alternative solutions and assess possible effects of specific solutions	5. Steps in scientific method
6. Identify major values operative in a person's daily life	6. One's own dominant values
7. Differentiate fact from value	7. Political and social responsibility
8. Analyze rationale for value	8. Dominant social and cultural values
9. Recognize and contrast one's own values with those of the culture	9. Philosophies
10. Relate values to decision-making processes in self and society	10. Governmental decisions
11. Describe how personal values develop in self and society	

FIGURE 10

(An Excerpt from Working Draft IV)

Florida Competency Assessment Project

What is Postsecondary Education?

A university education should give a person "a clear conscious view of his own opinions and judgments, a truth in developing them, an eloquence in expressing them, and a force in urging them. It teaches him to see things as they are, to go right to the point, to disentagle the skein of thought, to detect what is sophistical, and to disregard what is irrelevant. It prepares him to fill any post with credit and to master a subject with facility. (It shows him how) "to accommodate himself to others, how to throw himself into their state of mind, how to bring before them his own, how to influence them, how to come to an understanding with them, how to bear with them."

John Henry Cardinal Newman
The Idea of a University, 1852

BACCALAUREATE COMPETENCIES

I. Effective Communication

II. Problem Solving

III. Valuing and Self Knowledge

IV. Critical Thought

V. Historical Awareness

VI. Individual and Social Behavior

VII. Understanding and Applying Science

VIII. Arts and Aesthetics

Area I: Effective Communication

Rationale

Viewing communication from the standpoint of a transaction, as senders, effective communicators are able to formulate their thoughts, ideas and feelings in an organized, clear and concise manner calling upon the proper use of verbal and non-verbal symbols for expression. In contemporary culture, senders must also be able to use a variety of media to communicate their inner experience and function within the constraints of the media. As receivers, effective communicators are able to interpret meanings of others, receiving audible and visual symbols through a variety of media, and are able to relate back to senders an understanding of the latter's ideas, opinions and feelings. Finally, effective communicators are able to use their capacities for effective transaction in a variety of social contexts and for a variety of purposes such as motivating, persuading, emphasizing, informing and managing.

Generic competencies

Specifically, a graduate from a public university in Florida will be able to:

1. Send information via oral and non-verbal presentations through a variety of media;
2. Receive information via oral and non-verbal stimuli through a variety of media;
3. Send information using written materials;
4. Receive information from written materials;
5. Send information using numeric and graphic representations;
6. Receive information from numeric and graphic representations.

Area V: Historical Awareness

Rationale

Through a study of history, individuals gain a perspective on the complexity and pluralism of the human record, including an awareness that perennial human questions and concerns have been treated differently in various periods and cultures in the past. Individuals are able to comprehend the dialectic between forces for change and forces perpetuating continuity in the human story and demonstrate an ability to evaluate historical phenomena from three vantage points, namely, from the actors themselves, their contemporaries, and succeeding generations including their own. Finally, as a vital aspect of historiography, individuals are capable of discerning essential differences in viewing history-as-event and history-as-record in terms of methodologies of investigation and implicit and explicit bias.

Generic competencies

Specifically, a graduate from a public university in Florida will be able to:

1. Demonstrate the relationships among past, present and possible future events;
2. Trace the historical development of at least one culture different from one's own in terms of politics, economics, social organization, religion, world view, and values;
3. Interpret elements of an idea or its manifestation in terms of the culture in which it was produced;
4. Discern author bias in historical documentation.

*An Annotated List of Suggested Readings in Competency Based Education

1. Baker, George; Herrscher, Barton; and Roueche, John. Time as the Variable, Achievement as the Constant: Competency-Based-Instruction in the Community College. American Association of Community and Junior College Horizons Monograph, 1976.

This short monograph provides an excellent overview of competency-based instruction. It primarily presents a rationale for CBE.

2. Bloom, B.; Hastings, D.; and Madaus, G. Handbook on the Formative and Summative Evaluation of Student Learning. New York: McGraw-Hill, 1971.

This handbook remains a classic. It is a source book not only for any faculty member planning on devising a test for the classroom, but also an excellent resource for principles of evaluation. For the person interested in competency-based education, this provides a text for the three major types of assessment usually performed in the competency-based program.

3. Burke, J., et al. Criteria for Describing and Assessing Competency-Based Programs. The publication of the National Consortium of Competency-Based Education Centers.

This publication contains a list of criteria statements and an instrument for assessing competency-based programs. It is a very handy little instrument for anyone who is trying to identify the basic characteristics of a competency-based program.

4. Hall, Gene, and Jones, Howard. Competency-Based Education: A Process for the Improvement of Education. Anglewood Cliffs, N.J.: Prentice-Hall, 1976.

This particular text is a basic reader for anyone interested in competency-based education. Although it was written originally for teacher education, the ideas and examples readily relate to instructors in any field. This text is the kind of book one comes back to again and again as one becomes more and more involved in CBE.

5. Lukenbill, Jeff, and McCabe, Robert. General Education in a Changing Society. Dubuque, Iowa: Kendall/Hunt Publishing Co., 1978.

This short book describes not only the new competency-based general education program of Miami-Dade Community College, but also the process and philosophy of implementation of that program. It is an excellent example of a total program approach to CBE.

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*See also the selections listed in Part A.

CBE Bibliography (continued)

6. McBrayer, John. "Notes on Competency Based Education." LaCrosse, Wisconsin: West Central Wisconsin Consortium.

John McBrayer directs a center for the dissemination of information on competency-based education. This brief article is his introduction to CBE for the novitiate.

7. McClelland, David. "Testing for Competence Rather Than for 'Intelligence'." The American Psychologist, vol. 28 (I), January, 1973.

Most people in competency-based education consider this article a seminal work. It presents a rationale for criterion-referenced testing, a basic component of competency-based programs. It also presents a very strong case for a focus on competence, particularly competence based on real life skills.

8. O'Connell, Bill, and Moomaw, Ned. A CBE Primer. Atlanta, Georgia: Southern Regional Education Board, 1973.

This short monograph was one of the first texts to be written on competency-based programs in higher education. It describes several programs at various liberal arts colleges including Mars Hill College and Alverno College. It provides an overview of the issues in competency-based education.

9. Pottinger, Paul. Comments and Guidelines for Research in Competency Identification, Definition, and Measurement. Syracuse, New York: Educational Policy Research Center, 1975.

Pottinger is an excellent writer. This is an insightful paper on the issues basic to identifying competencies.

10. Schalock, H. D. Alternative Models of CBE, Second Edition. Portland, Oregon: Northwest Regional Education Lab, 1976.

This is a fine overview of competency-based education, particularly one leading toward a more current definition of CBE. Oregon has been working as an entire state on CBE for approximately seven years, thus, this particular article amounts to a state of the art report.

11. Trivett, David. Competency Programs in Higher Education. Washington, D.C.: American Association for Higher Education, 1975.

This brief book neatly summarizes the concept of CBE, its origins in higher education, what it might be like if implemented in your institution, and what eight universities have done to implement CBE. It concludes by raising some basic issues about CBE.

Institutions which have (or are) developing an Institution-wide approach to CBE:

Alverno College	Milwaukee, Wisconsin
Our Lady of the Lake	San Antonio, Texas
Mars Hill College	Mars Hill, North Carolina
Brigham Young University	Provo, Utah
Sterling College	Sterling, Kansas

Examples of Programs which are competency-based:

Nursing -- State of Arizona, many community colleges

Automotive Technology -- College of the Mainland, Texas City, Texas

Marketing -- Central Piedmont Community College, Charlotte, North Carolina

Secretarial Science -- Red Deer College, Red Deer, Alberta, Canada

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Pottinger, Paul. Comments and Guidelines for Research in Competency Identification, Definition, and Measurement. Syracuse, New York: Educational Policy Research Center, 1975.

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Spady, William G. and Douglas E. Mitchell. "Competency-Based Education: Organizational Issues and Implications." Educational Researcher, 1977.

Trivett, David. Competency Programs in Higher Education. Washington, D.C.: American Association for Higher Education, 1975.

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